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EDITED BY

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No. 3  
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Game Birds of Sikkim including the Darjeeling District  
and of the Jalpaiguri District, Bengal.

BY

C. M. INGLIS, F. Z. S., F. E. S., M. B. O. U.,

(Continued from page 24)

7. Hodgson's Imperial Pigeon (*Duculabadia insignis*. (Hodgs.)

We now come to the two species of Imperial Pigeons which are fine big birds. There is no difference between the sexes in the Imperial Pigeons. The one at present dealt with differs from the Green Pigeons and our other Imperial Pigeon in having no green or bronze on the upper plumage.

This bird, locally known as 'Hukas', measures from 18 to 20 inches in length. The head, neck and shoulders are lilac-grey changing to a copper brown on the mantle, back and wing coverts; the chin and throat are white and the remainder of the lower plumage is ashy grey except the under tail-coverts which are pale buff. The tail is blackish-grey with the terminal third brownish-grey. The iris is grey and the legs are carmine red.

With regard to this bird in the plains Stevens writes:— "I signally failed to locate any Imperial Pigeons in the Eastern Doars, in January 1922. My impression is these birds ascend in the 'cold weather' as it is only at this period of the year they occur sparingly in the minor valleys on the west." This is not quite accurate as they are undoubtedly found in the *plains* in winter and O'Donel has got them there in the Duars at Chilapata some twenty miles from the foot-hills during that time of the year. Stuart Baker also says:— "It extends into the plains adjacent to the hills during the cold weather." Stevens certainly got a bird at Gopaldhara, at 4,720 ft. elevation in January so some birds at any rate seem to ascend during the winter. I got it at Buxa at an elevation of 2,000 ft. in February and March. More information as to the movements of this fine Pigeon would be most interesting and useful.

Hodgson's Imperial Pigeon is a forest loving bird not coming into the open country like its cousin the Green Imperial Pigeon. Those got by O'Donel at Chilapata were in scrub jungle with *simal* trees. I did find them at Buxa near the Forest bungalow, probably resting, and at any rate Buxa can hardly be called open country. Stuart Baker has some interesting notes on the habits of these birds. He writes:— "When shooting in a forest in the Mahor Valley, at an elevation of some 1,000 ft. I was attracted to some jaman, or wild-plum trees by the continuous loud and very deep call of "wuck-wurr" made by these Pigeons, and when I went close up, I could see these birds moving about all over the higher branches, feeding greedily on the ripe plums. As it was impossible to shoot them on the wing owing to the very dense forest all round I contented myself with watching their movements, which were most interesting. They were not half so clever with their feet as the Green Pigeon are, and often after clambering up or down a branch to get to some choice morsel would, in craning over to catch hold of it, lose their balance, and to save themselves take to wing. Once overbalanced they did not seem to be able to pull themselves up again, yet their feet and legs must be pretty powerful, for when shot and not killed outright they will often hang, head downwards, clinging on to a branch until a second shot dislodges them.

A peculiar fact noted by this observer "was that they constantly uttered their very deep note during the time they were feeding whilst their cousin, the Green Imperial Pigeon is a very silent bird when so employed."

In places where they are common they often congregate in very large flocks; Stuart Baker has seen as many as two or three hundred on a tree, but single birds and pairs are not uncommonly met with. The flight is fast although, on account of the regular and rather slow beats of the wings, it doesn't appear to be so.

There is no information as to when the birds breed in our area but Stuart Baker writing about the North East frontier says it "appears to commence when the rains break, and to last through July and August, but I have seen its nest containing a young bird in March, and it is possible they have two broods, the first from February to March, and the second during the rains." The nest according to the same authority is "a rough platform of sticks..... measuring anything between nine inches and a foot in diameter by some two to four inches thick.....The majority of the twigs and sticks..... appear to have been torn living from the tree, but many also are pieces of twig and stick dead long before the bird made use of them."

They build in forest very often near a clearing or path and the nests are, according to Stuart Baker, "placed at no great height from the ground—some twenty to twenty-five feet—in small saplings, but I have seen nests as low down as twelve feet, and one or two at heights of over forty feet. No attempt is made to place the nest in a concealed position, and this with the sitting bird can usually be seen at some distance."

Unlike the Green Pigeons the Imperial Pigeons only lay one egg. That of this species is glossy white and measures 1.82 by 1.32 inches.

( *To be continued.* )

### **My first Tiger.**

There are few things to my mind that can beat the satisfaction, thrill and glow of pride on bagging ones' first Tiger. I remember well the time I got my first, it was in 1911 while on a week-end shooting trip with my friend Dr. Stone, camping at the old Salkaparak-bungalow, about a mile from the Jaldacca and Tondur Forest Reserve.

Previously to this I had been invited to the Xmas shoot, given by the D. C., at Ramshai, this was the first big shoot with elephants that I had been to and disgraced myself by missing a huge tiger, the only consolation was that, the next day, the same tiger was missed by three guns, all old hands at the game of shooting from howdah-elephants. What struck me most was the ease that tigers were got to kill baits tied up for them, so I thought I would try this method and then sit up over the kill. A decrepit old bullock being duly purchased for Rs. 8 I think, I took it along to our shoot, and had it tied up in an old bed of the Jaldacca river. My friend Dr. Stone was very sceptical and rather sarcastic as to whether the bullock would live long enough to reach the river.

Next morning we both went off, each on an elephant, and, to my joy, found that the bullock had been killed and dragged into the jungle, and also that there was a suitable tree on which to make a machan. I tried to persuade Dr. Stone to sit up also, but he wouldn't hear of it and was of the decided opinion that the tiger would never return in daylight. I then supervised the building of the machan (a very important matter in my opinion), and when it was finished, decided to have a sandwich and a drink and then sit up, there was nothing else to do, although it was only about two o'clock.

I had been sitting for about half an hour when it started to rain and being early February it was beastly cold. About 5 o'clock I was rewarded by an enormous tiger coming straight out on to the kill, without the slightest hesitation. I let fly with my .577 express and knocked him over, but was running no risks so gave him the other barrel. I called the mahout up, and the next problem was how to get the tiger on the elephant, there only being the mahout, a Southal coolie and myself; and as a big tiger weighs anything from 400 to 500 lbs. it was quite beyond us. I sent Biloo the Southal off to a bustie about half a mile away to get help and in the meantime tried to pass the time by sitting warming my hands on the tiger's still warm body, and estimating the measurements of the brute. It struck me as being a very big one and I had visions of it being a record!!

It was almost dark and still raining when Biloo returned with 4 or 5 coolies and with much trouble we at last got it padded, and set off for camp about

two miles away. What a trip it was in the dark and the rain! The pad got a cant on one side and the tiger looked as if it would slip off any moment; eventually about a mile from camp, we had to drop the beast off as, with the pad at such an angle, I was afraid of giving the elephant a sore back. Now, being on the road I walked on to camp and Dr. Stone, like the sportsman he is, went off at once with some coolies and a cart and brought the tiger in. I was absolutely dead beat but supremely happy.

The Tiger, a male in perfect condition, measured as he lay between pegs 9' 4", round the curves 10'; girth 52"; forearm 19"; height 44", girth of dry skull 26½". These measurements compare very favourably with the records given in the late Maharajah of Cooch Behar's book.

W. P. FIELD.

### A Sporting Pig.

A few months ago this noble pig was killed, it was a good ending to a sporting life, it had been hunted in this district for years, and was known through its having a stunted leg.

Many a Sunday had been spent by many people trying to shoot it, many a shave from a bullet, many traps and many escapes had it had from the forest chapparassi.

For a whole week had it eaten the poor coolies crops till at last a brave cooly decided to stop it.

One full moon he sat on a rock with a bow and arrow amongst his corn close to the forest, the night was still, the trees casting shadows, and out of the shadow came the pig, it was a big pig, a boar, a good four maunds, along it came up hill towards the man, and when the moon and all were blotted out, he let drive, straight it went, it had'nt far to go, the boar was close, squeaks, squeals most awful noises came, the boar charged, charged again and sparks flew from the rock, afterwards it went to within 20 yds. of the man's house and dug a hole and lay down. All night the boar grunted around this house. As dawn came it crept away and lay under a big stone. Later as the sun came up, coolies gathered and tracked it, when they saw it under the rock, they gave it 9 more arrows all of which had effect the poor pig crawled into the forest, crawled down hill, now and then digging a hole to lie down in, a few

coolies followed, further down and down it went, till it fell on the Riyang cart road above the station, and there tried to dig a hole, but was stopped doing so by seven bullock carts coming along, these the boar charged, but was unable to do any damage owing to an arrow having pinned its mouth from top to bottom; passing the carts it again tried to dig up the road the coolies were closer now, all yelling like mad, and the forest chaprassi hearing the noise rushed up with a gun, but the pig died before the fatal shot was fired.

S. W.

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### The Scents of Butterflies

BY

Edward B. Poulton, D. S. C., F. R. S.,

Fellow of Jesus College, Oxford, and Hope Professor of  
Zoology in the University.

The Editor, who has helped me with specimens and observations on Indian butterflies, now asks me to write something for the Journal of the Darjeeling N. H. S., and, busy as I am, I feel that I cannot refuse. I choose a subject in which far more records are needed, and, the enquiry being deeply interesting in itself and the material everywhere available in India, I trust that members of the Society may be induced to provide us with the information and, whenever possible, with the actual specimens which have been under observation.

The foundation of the subject was well and truly laid by Fritz Müller, the friend of Charles Darwin, who from his home in Brazil, poured forth a stream of observations in support of the new theories by which he had been inspired. A series of brief but important papers on the scent-producing organs of butterflies—especially those peculiar to the male sex—bore directly on Darwin's hypothesis of sexual selection. These papers, which appeared in Germany, remained untranslated until my friend, the late Dr. G. B. Longstaff, yielded to my wishes, and, in 1912, published translations by E. A. Elliott, as an appendix to his volume "Butterfly-hunting in many Lands". I do not know whether this book is accessible to members of the Darjeeling N. H. S., but if not, I shall be most pleased to send a copy to the library of the Museum or the Society.

Fritz Müller's papers are chiefly concerned with the scent-producing structures and but little with the scents themselves. The earliest record of the scent of a male butterfly is, I believe, that of the European "Green-veined White" *Pieris napi*—published by de Selys Longchamps between 80 and 90 years ago, independently discovered by Dr. R. C. L. Perkins, F. R. S., when a boy. My friend the late Roland Trimen, F. R. S. who did so much for the scientific study of African butterflies, was for a long time sceptical about these scents, but, towards the end of his life, when he came to live in England, was entirely converted by the male Green-veined White, with its distinct Lemon Verbena-like odour.

Extensive observations upon the scents of butterflies in many parts of the world have been made by Dr. F. A. Dixey, F. R. S. and Dr. Longstaff, and their results up to 1912 are brought together in the volume referred to above. They found that there were two very distinct kinds of scent—(a) those peculiar to the male, pleasant to man, and, as a rule, flowerlike; (b) those found in both sexes and generally unpleasant, recalling cockroaches, rabbit-hutches, stables, mouldy hay &c. These unpleasant scents, observed in butterflies with conspicuous colouring on both surfaces of the wings, presumably act as a warning of distastefulness to insect-eating animals. The scents peculiar to the males were doubtless charming to the females and an important and probably necessary aid to courtship.

It is most interesting and curious that an odour pleasing to a female butterfly should also be pleasing to man, and the similarity presents a puzzling and fascinating problem for the comparative psychologist. It may, however, be suggested as bearing on the solution that the colours and scents of flowers have been developed in mutually beneficial relationship to the developing senses of insects, while the human sense of smell has been evolved in a world where such scents are predominant.

These two very different kinds of scent, the one repellent and the other attractive, often exist in the same insect. Thus, the males of *Danaïe* and *Euploeine* butterflies possess, (as will be seen later on), the most elaborate structures for producing and distributing the odour which is used in courtship, while both males and females also give off an unpleasant smell which doubtless protects them from attack by insect-eating animals. That they do enjoy a large measure of immunity is

shewn by the fact that they are the principal models mimicked by butterflies of different groups and by day-flying moths in the tropics of all parts of the world.

The scents of male butterflies, such as the Green-veined White, are produced by peculiar scales which are found intermixed with ordinary scales on the upper surface of the wings. Dr. Dixey has investigated both kinds in many butterflies, and has found in their structure excellent characters by which closely similar species may be distinguished. He has also studied the development of the two kinds of scale on the developing wing within the pupa, and is, at the present time, carrying his investigations further in the same direction.

In large sections of butterflies the scent-producing scales are concentrated in streaks or patches on the upper surface of the fore or hind-wings, often upon the hind-wing where it is overlapped by the fore or on the border of the hind-wing which lies against the body. In these situations, where the scent-scales frequently take the form of a brush, the scent is probably protected from evaporation, except during use, when the surfaces are believed to be separated and the brush or patch exposed. In some of the Hesperid butterflies (or "Skippers") Müller has shewn that the scent-scales are similarly protected in a fold along the anterior or costal border of the fore-wing. But the most remarkable scent-organs are those discovered by Martin E. Moseley on the back of the head in the males of minute Trichoptera (the group containing our well-known "Caddisflies"), belonging to the genus *Hydroptila*. Eltringham has shewn that the cavity containing the scent-scales is, in some species, tightly closed by a pair of doors which can be opened when these organs are used. (Trans., 1919, p. 420)\*

The scent is also conserved in many Danaines by the peculiar scales being developed in a deep pocket on each hindwing. It is precisely here that observations are so much wanted, for it is obvious that the scent must be withdrawn from the pocket before it can be of any use in courtship.

Fritz Müller suggested that the two brushes which can be protruded from the anal extremity of the body of an American Danaine butterfly, are inserted into the pockets on the hind-wings and thus charged with scent, which is then made available by opening and shutting

\* This and similar references are to the Transactions of the Entomological Society of London; when "Trans." is omitted, to the Proceedings of the same Society.

the hairs of the brushes. He believed that the lips of the opening of the pockets on the hind-wing upper surface bore traces of friction as if caused by the insertion of a brush, but although some of these Danaines with pockets, such as *Danaida chrysippus*, are among the commonest butterflies of the tropics, no one, so far as I am aware, has ever seen it done. It is fortunately otherwise with the scent-patches on the hind-wings; for the males of two African and one Oriental species have been observed performing their toilet by W. A. Lamborn. The behaviour was just as Eltringham had inferred from the structure, the scent-bearing central part of the brush being closed and the stiff external bristles expanded. The friction against the patches was brought about by alternately arching and straightening the abdomen aided by movements of the wings, which probably also helped to promote the supply of scent.

In all three species observed by Lamborn the scent patches are placed near the hind (or anal) angle of the hind-wing, and are easily reached by the brushes at the end of the body; but in the Euploëas, which are so common in India, the patches are generally found upon the fore-wing, and it would be most interesting to observe the manner in which the brushes are brought into contact with them; similarly in those Euploëas with scent-patches overlapped by the fore-wing. The scent-patches, or brands as they are often called, exposed on the upper surface of fore or hind-wing, are generally easily recognisable because of their peculiar greasy appearance, which indeed is more than appearance for specimens are often received in which they have been eaten out by house-ants or other pests, being as neatly and accurately bitten away as if the work had been done with fine dissecting scissors. Furthermore Dr. Eltringham has shewn that fat is present in the patches. It is impossible on the present occasion, to do more than refer to his admirable papers, on the structure of the patches and brushes of male Danaine butterflies. (Trans., 1913, p. 399; 1914, p. 152). It must be mentioned, however, that in some of the patches examined by him, the scent-scales are reduced to their sockets which form as it were cups, each provided with a domed cover pierced at its apex by a minute pore. The scent is moreover preserved from loss by a scale which lies like a lid over the pore but is probably, as Eltringham suggests, raised or thrust aside by the stiff outer hairs of the

brush. It must be added that he found in both the scent-pockets and brushes a fine dust produced by the breaking up of excessively slender hairs—a dust which would float in the air and serve to convey the scent. This interpretation receives strong support in Carpenter's description of the use of the brushes in courtship quoted on a later page.

Perhaps the most interesting of all hitherto unwitnessed observations would be the insertion of the brushes into the deep pockets of such a species as *chrysippus*, or still better *Tirumala limniace* or *septentrionis*. If such a chance should occur—and I am confident it will soon present itself to a naturalist on the look out for it—I trust that the observer will note whether the whole closed brush is inserted or only the inner pencil of hairs, and whether both brushes are inserted simultaneously into first one pocket and then the other, or the right brush into the right pocket and the left into the left. It must be remembered, however, as my friend Mr. Lamborn suggests, that the hind-wing may be partially approximated when the brushes are inserted. In all these observations notes should be taken of the parts of the brush which are concerned and their condition, the movements of body and wings, the attitude assumed by the butterfly and the length of time occupied by the process, and as far as possible, its different phases.

As a guide to future observers the essential parts of Lamborn's records are quoted below:—

On 15 January, 1921, at Kuala Lumpur, F. M. S., a male of the Danaïde butterfly, *Parantica agleoides*, was seen to settle on a plant in the laboratory grounds. Continuing, in Lamborn's words,—“I immediately went out to watch it and saw that the hind-wings were apposed for about the posterior third of their surface, and that the anal brushes were protruded, the abdomen being curved so as to bring them into line with the brands on the hind-wings. Over these the unexpanded brushes were passed at about the rate of twenty a minute. The operation went on so long—about five minutes—that I was able to send, first for a chair on which to stand so as to watch the insect more closely, and then for a net to secure it.” (1921, p. XCV.)

The African Danaïdes of the genus *Amauris* adopted a different attitude with the wings expanded and moved from time to time. An exceptionally favourable opportunity was offered at Tanga, E. Africa, on 5 August, 1918, when a number of male *Amauris niavius dominicanus*

were performing their toilet. Lamborn gives the following account of the process:—

“My attention was attracted to a fine fresh male resting with expanded wings, by the gleam in the sunshine of a white structure at the hinder end of its body. On near approach I discovered that this was due to the extrusion of the anal tufts, the gleam being due to the sunshine reflected off a pencil of brownish white hairs resting on the inner side of the scent-patches. The outer black hairs were spread out fanwise, accurately covering the patch, the foremost hairs pointing towards the head of the insect, the middle hairs at right angles to the mid-line of the body, and the hindmost hairs pointing directly back.....The butterfly remained motionless for some seconds in this attitude (with the abdomen strongly arched), and then regular but sudden movements of the wings took place, the fore-wings being approximated and then over-extended, the hind-wings following to about half approximation and then also being over-extended. By this means a slight movement of the black hairs over the scent-patches only was effected. The operation took place 10 or 12 times in half as many seconds, and then, the tufts being withdrawn, the butterfly leisurely approximated its wings and flew away. I found that almost as many males as I followed, old worn specimens as well as fresh ones, eventually settled and performed the same operation, which I studied in several more.....I followed a second male and timed the operation by the second-hand of my watch. From the first extrusion of the tufts to their complete retraction lasted 1 minute 40 seconds. These butterflies were so intent on their toilet that I was able to approach my nose to within two or three inches of a third with tufts extruded. I experienced a sensation as if an aromatic snuff had impinged on the mucous membrane of my nostrils. Subsequently I seized by one wing a fourth butterfly with tufts extruded. They remained extruded in spite of its struggles, and on smelling them I experienced the same sensation.” (1918, p. clxxii).

These fine observations entirely confirm Dr. H. Eltringham's inference based on a microscopic examination of the structures:—“We may suppose that the insect brushes out the secretion, the stiffer (darker) hairs probably assisting in lifting the covering scales.....It should be noted that these hairs are on the outer side of the brush, and would thus naturally come first into contact with the scent-patch.” (Trans., 1913, p. 404). Lamborn's

earlier observations on African Danaines (1911, p. xlvi; 1912, p. xxxvi; 1913, p. lxxxiii), recorded with less detail; are consistent with the passage I have quoted nearly at length.

The brushes having been charged with scent, the next stage is their use in courtship and this, too, has up to the present been recorded by only a single naturalist Dr. G. D. H. Carpenter, who wrote 23rd July, 1914, from Kome Island, in the N. W. of the Victoria Nyanza:—"On July 21st at the edge of the forest here on Kome Island about 3 p. m. I saw the courtship of *Amauris psyttalea* Plötz. I noticed two flying about, obviously a male pursuing a female. Presently the latter settled on an erect dead flower-spike of an aromatic labiate about two feet above the ground. She sat with head upwards, and body perpendicular, wings outspread at right angles. The male hovered flutteringly about four inches over her head, rising and falling a little, but on the whole at about the same level. His abdomen hung down a little and every now and then, at intervals of a few seconds, the two flaps, (the male claspers, especially large in Danaines) at the end of the body were widely separated (so as to stand out at right angles to the longitudinal axis of the body) and the brush was quickly protruded and as quickly drawn in again. I was surprised to see what a large structure it was—being quite white and visible at a distance of several yards. In fact, I first noticed it at that distance, and went closer to see what was going on. The female sat quite still, except for an occasional very slight movement of the wings. I watched for a minute or so, and it was impossible to doubt that the male was endeavouring to excite the female. Just as I thought I would catch them as records, the female suddenly flew away and the male followed. I have, however, no doubt of the species. The very sudden protrusion of the brush might easily cause the peculiar fine hairs of stellate section, described by Eltringham, to break into sections which would float like dust in the air." (1914, p. cxi)

The above-quoted passage describes what I believe to be the only observation on the use of the male brushes, made before the present year. But five days ago I received a letter from Dr. Carpenter telling me that on the ninth of June, at Zaipi, E. Madi, Uganda he had seen a male *Danaida chrysippus* (of the form *albinus*) courting a female of the same form, "and he did just the same as the *Amauris psyttalea* I saw on Kome years ago!"

It will be inferred from Lamborn's and Carpenter's descriptions that the butterflies are so intent on their performances that they are not disturbed by the close approach of a careful observer.

I believe that this brief paper contains an account of everything essential that has been observed upon the charging of the brushes and their use in courtship and we look to Oriental naturalists to help us to fill the immense blanks in our knowledge of this fascinating subject

8th August 1927.

E. B. P.

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[It is very kind of Professor Poulton notwithstanding his many duties to have given us this most interesting paper on an interesting theory and it is hoped that those who have opportunities of adding to our information on this subject will do as suggested by the author. With regard to conspicuous colouration acting "as a warning of distastefulness to insect-eating animals" I had an instance a short time ago which didn't prove very efficacious so far as the butterfly was concerned. A friend of mine had caught several *Euploea mulciber* and placed one in a cage in which was confined a Black-headed Sibia (*Leioptila c. capistrata*). The bird seized it and battered it about for a bit and then dropped it; at first the butterfly didn't appear to be much the worse for this treatment, but the bird had by no means finished with it and kept on picking it up and battering it and dropping it till the insect was dead. This butterfly belonged to a family which are hard leathery bodied species and presumably utterly unpalatable, which proved to be the case in this instance, as once the butterfly was dead the bird took no more interest in it. But how did this protective colouration benefit this individual case?? One theory is that, after having discovered how unpalatable this particular specimen was, the bird would make no further attempts to capture others similar to it. It would have been interesting to have carried on the experiment further by offering the bird a second butterfly of the, same kind but unfortunately I couldn't spare the time to do so. Another thing is that this particular bird had been brought up by hand and so had not the benefit of parental teaching and knowledge. Editor.]

### Do Jungly Human beings exist in India ?

I have just received copies of the Journal and note the appeal to contribute to it any experiences one has, so pen these few lines which, although not appertaining to shikar, may prove interesting.

Last year when out on one of my shooting expeditions, I came across some most peculiar footmarks. They were in a river bed near the Bhutan hills and miles from the haunts of any human beings. A Gurkha shikari and myself happened to be walking up a tributary of the main river bed, which after running for about 20 yards through clear surroundings drifted into thick jungle and long grass. It was in this clear space where we saw them and they only covered some 15 yards of it then disappeared in the surrounding jungle. I may state that they were the only ones we saw for miles. I am a keen shikari and know the pug marks of all our jungle animals and they certainly belonged to none of these. They were minute and resembled those of a human being and I feel certain they were made by some sort of jungle person with a very light tread as they hadn't sunk into the sand as much as those of a human being would have done. On asking the Gurkha what he thought about them he said they were those of a *jungli admi*, a race of pigmies who wore no clothes and more resembled, both in appearance and habits, beasts than human beings. He also informed me that their powers of hearing, sight and scent were so acute that it was seldom they were ever seen. It seems to me quite possible that some such tribe exists living a wholly jungle life and shunning civilization. I would be glad if any of our members could tell me whether they have ever heard of them or know anything about them.

Dima T. E.

Kalchini,

26th July 1927.

J. B. R. Pettifor.

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### EDITORIAL.

This is a short account of the touring and collecting done and a list of visitors and members up to the time it was written viz. 6th December 1927.

*Touring and Collecting:* From the 1st February to about the end of March was spent in the Duars. I was again the guest of Mr. and Mrs. O'Donel at Hasimara and we made excursions away from there on many occasions. There were fewer new species to our collection obtained

but this was to be expected; still we added 215 bird's skins of which some 20 were new to us. We only got two mammals and not many insects.

I spent a week at Mangpu in May and early June and another week on return from our Sikkim trip about the third week in October, on both these occasions 20 birds were collected and also the following:—Dragonflies 160; Beetles 111; Butterflies 62; Wasps and Bees 19. Bugs 11 and Moths 6.

Mr. Shaw and myself made a most interesting trip to North Sikkim and were away from the beginning of; October till the 25th of that month. We penetrated as far north as we could go, camping out on the high barren land of that part of the country, our highest camp was at an elevation of 17000 ft. near the Tsolamo lake. We went up the Lachen Valley and crossed the Dongkhya La (18131 ft.) and returned by the Lachung Valley. Lt. Col. F. M. Bailey C. I. E. very kindly made all arrangements about transport, and H. H. the Maharajah of Sikkim very kindly placed his car at our disposal both going and returning and gave us very great assistance. Our trip was made much easier through the kindness of the State Engineer who made slips etc. passable and there were many of these to negotiate at that time of the year. The fauna at those high elevations is wholly Tibetan so we were able to add some birds and mammals new to our collection; these will be given in detail in another Journal. The difficulties in collecting at high altitudes are very great and due to the rarified atmosphere one hasn't much energy and to walk at all means great exertion. The weather, till we got to the higher elevations, was not good and it was too late in the year for many butterflies and other insects to be about.

Besides the above we collected some 15 or 20 birds locally on Birch Hill which were useful for our Darjeeling case of birds.

We will now give a list of the contributions to the Museum since our June number.

One Leopards' skin (*Felis pardus*) from Mr. Rajpati Rai.

One Brown Ferret Badger's skin (*Melogale nipalensis*) from Mr. F. C. Riches.

One Himalayan Pied Kingfisher (*Ceryle lugubris guttulata*) from Mr. T. A. Baldry.

One Red-headed Trogon (*Pyrotrogon erythrocephalus*) from Mr. Bhuktu Singh.

One Cantor's Coluber (*Coluber cantoris*) from Mr. Keelan.

One Dragonfly (*Aeschna erythromelas*) from Mr. P. V. Osborne.

One Leaf-insect (*Phyllium scythe*) from Mrs. Birch.

Two Centipedes from The Hon'ble Maharajah of Nadia.

A large number of moths from Col. Hutchison, insects of various kinds from Mr. G. E. Shaw amongst them the dragonfly *Stylogomphus inglisi*; a large stick-insect from Lt. Col. F. C. Fraser, I. M. S. The executors of the late Dr. G. B. Longstaff, through Professor E. B. Poulton kindly gave us a copy of Dr. Longstaff's book "Butterfly Hunting in many Lands."

*Visitors*:--The following distinguished visitors visited the Museum during the year.

The Hon'ble Justice A. Page on the 20th April 1927.

His Excellency Sir Stanley and Lady Jackson on the 25th May 1927.

Major General H. D. O. Ward and Mrs. Ward on the 30th July 1927.

Professor T. D. A. Cockerell of the University of Colorado, the Specialist on Bees of the World, on the 5th December 1927.

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